

EXHIBIT 6

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VALUATION

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MEASURING AND MANAGING THE
VALUE OF COMPANIES

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MCKINSEY & COMPANY

40 FUNDAMENTAL PRINCIPLES OF VALUE CREATION

EXHIBIT 3.10 Impact on Value of Improving Margin vs. Capital Productivity

ROIC, %	Increase in value from improving ROIC by 1 percentage point ¹ % change		
	Through margin improvement	Through capital productivity	Ratio of margin impact to capital productivity impact
10	20.0	13.5	1.2x
20	6.7	2.9	2.3x
30	4.0	1.2	3.4x
40	2.9	0.6	4.6x

¹ For a company with a 9% cost of capital.

had low growth but increased their ROICs outperformed the faster-growing companies that did not improve their ROICs.

One final factor for management to consider is the method by which it chooses to improve ROIC. A company can increase ROIC by either improving profit margins or improving capital productivity. With respect to future growth, it doesn't matter which of these paths a company emphasizes. But for current operations, at moderate ROIC levels, a one-percentage-point increase in ROIC through margin improvement will have a moderately higher impact on value relative to improving capital productivity. At high levels of ROIC, though, improving ROIC by increasing margins will create much more value than an equivalent ROIC increase by improving capital productivity. Exhibit 3.10 shows how this works for a company that has a 9 percent cost of capital.

The reason for this relationship is best explained by an example. Consider a company with zero growth, \$1,000 of revenues, \$100 of profits, and \$500 of invested capital (translating to a 10 percent margin, a 50 percent ratio of invested capital to revenues, and ROIC of 20 percent). One way to increase ROIC by one percentage point is to increase the profit margin to 10.5 percent, increasing profits by \$5. Since the company is not growing, the \$5 of extra profits translates to \$5 of cash flow each year going forward. Discounting at a 10 percent cost of capital, this represents a \$50 increase in value. The company could also increase ROIC by reducing working capital. If it reduced working capital by \$24, ROIC would increase to 21 percent (\$100 divided by \$476). The company's value would increase only by the \$24 one-time cash inflow from reducing working capital. Future cash flows would not be affected.

ECONOMIC PROFIT COMBINES ROIC AND SIZE

You can also measure a company's value creation using economic profit, a measure that combines ROIC and size into a currency metric (here we use the

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U.S. dollar). Economic profit measures the value created by a company in a single period and is defined as follows:

$$\text{Economic Profit} = \text{Invested Capital} \times (\text{ROIC} - \text{Cost of Capital})$$

In other words, economic profit is the spread between the return on invested capital and the cost of capital times the amount of invested capital. Value Inc.'s economic profit for year 1 is \$50 (Value Inc. must have \$500 of starting capital if it earns \$100 at a 20 percent return in year 1):

$$\begin{aligned}\text{Economic Profit} &= \$500 \times (20\% - 10\%) \\ &= \$500 \times 10\% \\ &= \$50\end{aligned}$$

Volume Inc.'s economic profit in year 1 is zero (Volume Inc. must have \$1,000 of starting capital if it earns \$100 at a 10 percent return in year 1):

$$\begin{aligned}\text{Economic Profit} &= \$1,000 \times (10\% - 10\%) \\ &= \$1,000 \times 0\% \\ &= \$0\end{aligned}$$

You can also value a company by discounting its projected economic profit at the cost of capital and adding the starting invested capital. Value Inc. starts with \$500 of invested capital. Its economic profit in year 1 is \$50, which grows at 5 percent. Discounting the growing economic profit at a 10 percent discount rate gives a present value of economic profit of \$1,000.⁹ Use these amounts to solve for value:

$$\begin{aligned}\text{Value} &= \text{Starting Invested Capital} + \text{PV}(\text{Projected Economic Profit}) \\ &= \$500 + \$1,000 \\ &= \$1,500\end{aligned}$$

The value of Value Inc. using the economic-profit approach is \$1,500, exactly the same as with the discounted-cash-flow (DCF) approach.

Economic profit is also useful for comparing the value creation of different companies or business units. Consider Value Inc.'s economic profit of \$50. Suppose Big Inc. had \$5,000 in invested capital but earned only a 15 percent return on capital (and assume it doesn't have investment opportunities with

⁹ The present value of economic profit for a growing perpetuity is economic profit in year 1 divided by the cost of capital minus the growth rate. For Value Inc., the present value of economic profit is therefore $\$50 / (10\% - 5\%)$.

This version of ROIC simply translates the typical formula of net operating profit after taxes (NOPAT) divided by invested capital into a per unit calculation: price per unit, cost per unit, and invested capital per unit.¹ To earn a higher ROIC, a company needs a competitive advantage that enables it to charge a price premium or produce its products more efficiently (at lower cost, lower capital per unit, or both). A company's competitive advantage depends on its chosen strategy and the industry in which it operates.

The strategy model that underlies our thinking about what drives competitive advantage and ROIC is the structure-conduct-performance (SCP) framework. According to this framework, the structure of an industry influences the conduct of the competitors, which in turn drives the performance of the companies in the industry. Originally developed in the 1930s by Edward Mason, this framework was not widely influential in business until Michael Porter published *Competitive Strategy* (Free Press, 1980), applying the model to company strategy. While there have been extensions and variations of the SCP model, such as the resource-based approach,² Porter's framework is probably still the most widely used for thinking about strategy.

According to Porter, the intensity of competition in an industry is determined by five forces: the threat of new entry, pressure from substitute products, the bargaining power of buyers, that of suppliers, and the degree of rivalry among existing competitors. Companies need to choose strategies that build competitive advantages to mitigate or change the pressure of these forces and achieve superior profitability. Because the five forces differ by industry, and because companies within the same industry can pursue different strategies, there can be significant variation in ROIC across and within industries.

Exhibit 8.1 underlines the importance of industry structure to ROIC. It compares the median return on invested capital over more than 20 years in two sectors: branded consumer goods and extraction industries (such as mining and oil and gas). Consumer goods have earned consistently higher ROICs than extraction companies. In addition, the returns of extraction-based companies have been highly volatile.

The reason for this difference in the industries' performances lies mainly in differences between their competitive structures. In the branded-consumer-goods industry, companies such as Nestlé, Procter & Gamble, and Unilever developed long-lasting brands with high consumer loyalty that made it difficult for new competitors to gain a foothold. Building on these advantages, these companies were able to increase their returns on capital from around 20 percent in the mid-1990s to roughly 30 percent two decades later, despite challenges to traditional brands from new market entrants. One example is

¹ We introduce *units* to encourage discussion regarding price, cost, and volume. The formula, however, is not specific to manufacturing. Units can represent the number of hours billed, patients seen, transactions processed, and so on.

² See, for example, J. Barney, "Resource-Based Theories of Competitive Advantage: A Ten-Year Retrospective on the Resource-Based View," *Journal of Management* 27 (2001): 643–650.

manufacturers. Or consider the highly competitive European airline industry, where most players typically generate returns very close to their cost of capital—and occasionally below it. Nevertheless, Ryanair earns superior returns, thanks to its strategy of strictly point-to-point connections between predominantly secondary airports at the lowest cost in the industry.

Finally, industry structure and competitive behavior aren't fixed; they're subject to shocks from technological innovation, changes in government regulation, and competitive entry—any or all of which can affect individual companies or an entire industry. We show in this chapter's final section that the software and pharmaceutical industries, for example, consistently earn high returns. However, the leading companies may not be the same in 20 years, just as many of today's leaders were not major players or didn't even exist 20 years ago.

COMPETITIVE ADVANTAGE

Competitive advantage derives from some combination of ten sources, defined in Exhibit 8.2. Of these, five allow companies to charge a price premium, four contribute to cost and capital efficiency, and one (often referred to as "network economies") combines price and cost advantages to produce increasing returns to scale. It is important to understand that competitive advantage drawn from these sources is enjoyed not by entire companies but by particular business units and product lines. This is the only level of competition at which the concept of competitive advantage affords you any real traction in strategic thinking; even if a company sells soup or dog food exclusively, it may still have individual businesses and product lines with very different degrees of competitive advantage and therefore different returns on invested capital.

EXHIBIT 8.2 Sources of Competitive Advantage

Price premium	Cost and capital efficiency
Innovative products: Difficult-to-copy or patented products, services, or technologies	Innovative business method: Difficult-to-copy business method that contrasts with established industry practice
Quality: Customers willing to pay a premium for a real or perceived difference in quality over and above competing products or services	Unique resources: Advantage resulting from inherent geological characteristics or unique access to raw material(s)
Brand: Customers willing to pay a premium based on brand, even if there is no clear quality difference	Economies of scale: Efficient scale or size for the relevant market
Customer lock-in: Customers unwilling or unable to replace a product or service they use with a competing product or service	Scalable product/process: Ability to add customers and capacity at negligible marginal cost
Rational price discipline: Lower bound on prices established by large industry leaders through price signaling or capacity management	

Increasing returns to scale: Scalable products that offer increasing value to customers with scale